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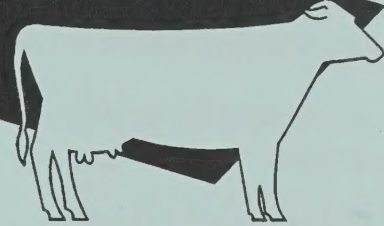
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# The Making of a National Study:

## NAHMS Dairy '96



In 1991, the USDA's National Animal Health Monitoring System (NAHMS) went to the source to identify the dairy industry's foremost informational needs. Industry representatives functioning as Advisory and Technical groups determined the primary focus of NAHMS first national study of dairy production and helped to define study objectives that propelled the 1991-92 NAHMS National Dairy Heifer Evaluation Project from an idea to reality.

NAHMS turned to industry members again in 1995 using a focus group approach for guidance in preparing for their second dairy study. Various resources, described below, contributed ideas through individual comments and group discussions.

- **The American Farm Bureau Federation Dairy Advisory Committee** was the first to serve as a NAHMS focus group with a discussion held in February 1995. Water quality, Johne's disease, and milk quality issues topped their list of informational topics needing national attention.
- A cross-disciplinary group of dairy specialists, the **Bovine Alliance for Management and Nutrition (BAMN)**, first convened in 1992 to assist in interpreting and disseminating results of the NAHMS National Dairy Heifer Evaluation Project. In March and April 1995, BAMN members representing the American Feed Industry Association, the American Dairy Science Association, and the American Association of Bovine Practitioners participated in an electronic discussion on priorities for the upcoming NAHMS study. Their information priorities began with cow metabolic diseases and food safety pathogens.
- **The USDA:Animal and Plant Health Inspection Service** focus group convened early in April 1995 to identify preferences for Dairy '96 objectives.

Representatives brought lists prioritized by personnel in each region. At the top of the final summarized objectives were regional prevalence of specific pathogens, management practices, and quality assurance.

- The Internet was the newest communication tool used during the Dairy '96 needs assessment. Although **Dairy-L** subscribers were the most varied audience to participate in a discussion, their list, summarized in April 1995, was succinct: 1) Johne's disease, 2) animal well-being, 3) food safety issues, and 4) fresh cow metabolic diseases.
- **The National Milk Producer's Federation Disease Advisory Committee** aptly served as spokespersons for their membership as they urged NAHMS to address the most prevalent animal diseases creating economic hardship for dairy farmers. Prevalence of those diseases and related management practices were the first requests voiced in their April 1995 response, followed by biosecurity practices, food safety issues, and others.
- **The Council on Dairy Cattle Breeding** surveyed their member representatives on NAHMS' behalf. In general, their greatest concerns identified in April 1995 were digital dermatitis (hairy heel warts), Johne's disease, mastitis, and vaccination practices.
- Also in April, the **Livestock Conservation Institute (LCI)** Board issued a resolution supporting the NAHMS 1996 dairy study. Individual LCI members contributed comments to the needs assessment request, focusing on disease agents beginning with Salmonella and Johne's disease.



# Dairy '96 Study Objectives

Following receipt of the above responses, the NAHMS national staff defined the purpose of Dairy '96 to be: to support the highest priority information needs of animal health officials, producer groups, and veterinary groups relative to the dairy industry.

To meet these informational needs, the study will have the following objectives:

1) **Estimate national and regional prevalence of specific pathogens in dairy cattle, including Mycobacterium paratuberculosis (Johne's disease), bovine leukosis virus, and Neospora sp.** A further objective is to provide information on factors associated with M. paratuberculosis in cattle to support the development of herd certification programs. The resulting information is intended to support preventive efforts directed towards these key bovine pathogens. Disease pathogens were identified as a priority by focus groups representing dairy producer groups, veterinary/dairy scientist groups, and USDA:APHIS.

2) **Describe baseline dairy cattle health and management practices used on U.S. dairy operations.** Aspects include assessment of baseline cattle health, health management practices, herd biosecurity practices, and cow culling management practices which will provide baseline estimates and trend analysis for the dairy industry. These topics were identified as a priority by focus groups representing dairy producer groups and USDA:APHIS.

3) **Describe management practices used to assure the production of quality dairy products on U.S. dairy operations.** NAHMS hopes to support on-going quality assurance efforts of the dairy industry as well as support efforts of the dairy industry in being responsive to consumer concerns relative to animal care practices. Focus groups representing dairy

producer groups, veterinary/dairy scientist groups, and USDA:APHIS identified quality assurance as a priority.

4) **Describe the incidence of digital dermatitis (hairy heel warts) on U.S. dairy operations.** A further objective is to provide information on factors associated with digital dermatitis to obtain a broad perspective of this emerging bovine pathogen which was identified as a priority by representatives of dairy producer groups.

5) **Evaluate factors related to Salmonella and E. coli 0157:H7 in dairy cattle** to support efforts of USDA and the dairy industry to enhance preharvest food safety by gaining a better understanding of the ecology of this pathogen on dairy operations. Food safety pathogens were identified as priorities by focus groups representing dairy producer groups, veterinary/dairy scientist groups, and the USDA.

6) **Provide a profile of animal waste handling systems used on U.S. dairy operations** to support efforts of the dairy industry in responding to concerns about animal and public health. This topic was identified as a priority by representatives of dairy producer groups.

Representatives of the National Agricultural Statistics Service (NASS) will begin contacting producers for the NAHMS Dairy '96 study in January 1996.

For more information, contact:

Centers for Epidemiology & Animal Health  
USDA:APHIS:VS, Attn. NAHMS  
555 South Howes, Suite 200  
Fort Collins, CO 80521  
(970) 490-7800  
Internet: NAHMS\_info@aphis.usda.gov



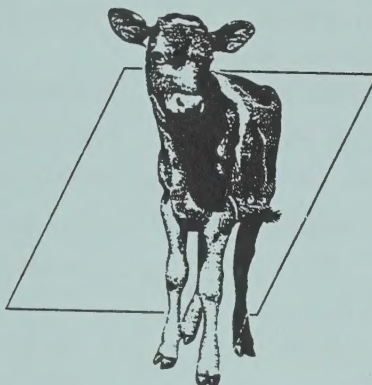


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# Impacts of the NAHMS



## National Dairy Heifer Evaluation Project

Since the first National Dairy Heifer Evaluation Project (NDHEP) results were released in the spring of 1993, the industry has applied the information to prepare for emerging issues and improve production through education and clarifying research needs.

This National Animal Health Monitoring System (NAHMS) study was a cooperative effort of state agricultural departments; universities; and the following USDA agencies: the Cooperative Extension Service (CES), National Agricultural Statistics Service (NASS), and Animal and Plant Health Inspection Service (APHIS). The NDHEP described heifer health and management on 78 percent of U.S. dairy farms.

### Industry Preparedness:

Through NDHEP 1991-92 baseline information, the dairy industry has a measure by which to gauge future U.S. heifer health, infection, and management status and identify emerging issues.

The NDHEP provided national estimates of 1991-92 prevalences of Escherichia coli 0157:H7, Salmonella, and Cryptosporidium in dairy heifers.

- Information on prevalence of Cryptosporidium parvum and shedding by calf age was available to officials and the public to answer concerns during a nationally-publicized, spring 1993 outbreak of related human illness in Milwaukee, Wisconsin.
- That same winter, another outbreak of human illness was reported in the Pacific Northwest, this time

related to Escherichia coli 0157:H7. NDHEP information on the bacteria's prevalence in dairy cattle helped officials define public risks and research needs.

- NDHEP results of Salmonella incidence in dairy cattle have helped officials and researchers in food safety and animal health pinpoint areas of further investigation and research.

In mid-1994, cases of acute bovine viral diarrhea surfaced in the U.S. following a 1993 outbreak in Canada. NDHEP information on producer vaccination and biosecurity practices helped officials address risk of disease spread and target educational efforts on vaccination protocols.

### Moving Forward:

NDHEP results identified opportunity areas for dairy producers and veterinarians to improve neonatal heifer management. For example:

- One-third of U.S. producers reported allowing calves to receive first colostrum via nursing, a method less likely to ensure adequate colostrum intake than delivery via a bucket or bottle. Forty percent of dairy calves at 24 to 48 hours of age had immunoglobulin levels less than 1,000 mg/dl, a level often inadequate to ward off disease.
- More than 20 percent of U.S. dairy operations reported an average weaning age greater than 10



weeks of age. Many producers could lower weaning age below the national average of 8 weeks to save feed costs.

- Only 53 percent of producers reported providing ad libitum water within the first 2 weeks of their calves' lives, while 89 percent fed grain in that period. However, water intake stimulates grain intake which can allow earlier weaning and reduce feed costs.

Availability of information on dairy management practices has contributed to research efforts to identify management factors related to Cryptosporidia, Salmonella, and E. coli 0157 shedding and mortality in dairy cattle.

Industry members have tapped the NDHEP data base for information relating to disease incidence, changes in diseases and trends, risk factors for various diseases, and planning for outreach activities.

Existing data, such as the NDHEP results, have helped target additional research efforts, such as E. coli 0157:H7 studies at the University of Georgia and Washington State University.

### **Education:**

From its inception, the study provided participating producers and their herd veterinarians with opportunities to learn about improving heifer health and production. Seventy-four percent of the producers directly involved in the NDHEP reported they benefited personally from study participation. Fifty-seven percent had already made operation changes, and 62 percent were planning changes, at the time of the evaluation. Improving calf housing, bettering colostrum and milk replacer management practices, supplementing selenium, and enhancing record keeping were the most common changes reported.

This study was instrumental in bringing together private and public-practice veterinarians, dairy scientists, and members of the feed industry to provide producers with information regarding

recent changes in milk replacer formulation, such as use of protein sources other than casein which do not clot in the calf abomasum. This group has expanded their efforts to interpret other NDHEP results for producers.

A continually growing list of customers in dairy production and related services apply NDHEP results for in-house or customer education.

- As the study began, NDHEP training sessions and nonregulatory on-farm visits provided VS Veterinary Medical Officers and Animal Health Technicians with opportunities to expand their knowledge of the dairy industry, prepare for emerging issues, and improve interaction with producers.
- Land o' Lakes, IDEXX, and the Cooperative Extension Service are examples of organizations using the information to further training of their own representatives and increase service or effectiveness.
- Tuskegee, Auburn, and Colorado State are among the universities that use NAHMS materials in the classroom to train industry members of the future.

In 1996, the National Animal Health Monitoring System will begin its second national study of the dairy industry. "Dairy '96" will provide another snapshot of dairy health and production to reveal industry changes over the 5-year span between studies, then move in to concentrate on Johnes disease, Neospora abortion, digital dermatitis, and dairy quality management practices.

For more information on the NDHEP and the National Animal Health Monitoring System, contact:

Centers for Epidemiology and Animal Health  
USDA:APHIS:VS, Attn. NAHMS  
555 South Howes, Suite 200  
Fort Collins, CO 80521  
(970) 490-7800  
E-mail: NAHMS\_INFO@aphis.usda.gov





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## National Animal Health Monitoring System

# National Studies

### **Why national studies?**

The Animal Industry Act of 1884 directed the Animal Health Inspection Services' (APHIS) predecessor, the Bureau of Animal Industry, to "collect such information...as shall be valuable to the agricultural and commercial interests of the country." The Bureau effected this mandate to successfully eradicate bovine contagious pleuropneumonia in the late 1800's. Hog cholera, bovine brucellosis, tuberculosis, and pseudorabies were more recent targets.

In the mid-1970's, the National Academy of Science sparked APHIS to reassess its responsibilities toward the industry's information needs in light of the modern food animal industry. U.S. agriculture was beginning to function in the context of world trade. Also, the public demanded production of wholesome, high-quality, safe, and cost-efficient products. Producers, veterinarians, academia, educators, and government policy makers alike were in need of **scientifically-sound and statistically-valid, national information** to move the industry forward. APHIS viewed the need for proactive information to become even more timely, accurate, and user-friendly in the latter quarter of the 20th century than it had been in 1884 and recognized its responsibility to collect and provide information beyond the existing level. Veterinary Services' (VS) network of federal veterinarians; their inherent knowledge, training, and locations across the U.S.; and their collaboration with State animal health officials brought the monitoring program to VS.

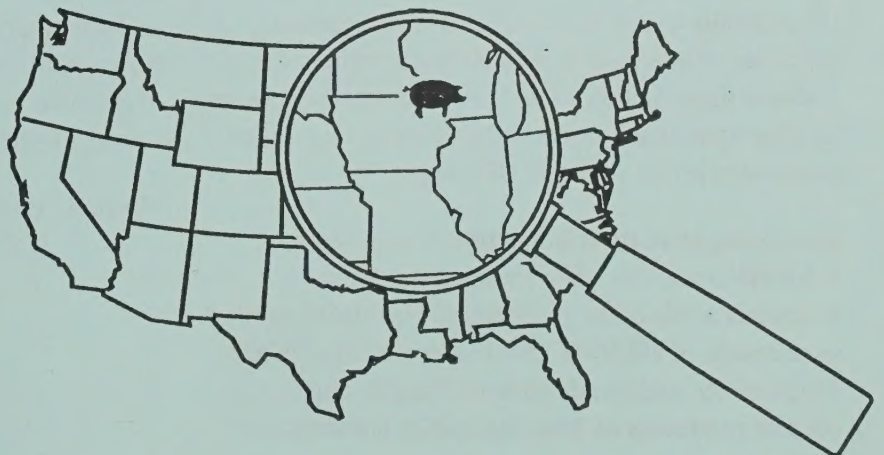
### **How do national studies work?**

The National Animal Health Monitoring System (NAHMS) began at the first level of food production -**on the farm** - to test the theory and methods of data collection necessary for a national program. Successes of state pilot projects in the 1980's brought encouragement, and by

1990, NAHMS was ready to begin its first attempt at describing health and production relating to a national food animal population.

From the earliest studies, program designers recognized the need for NAHMS to function unlike other VS regulatory programs in that **producer participation must be voluntary to obtain high data quality, and data from individual operations must be held confidential**. Since, reliance on a convenience sample of volunteers would not assure statistically-valid results, planners were led to the USDA:National Agricultural Statistics Service (NASS). NASS provides NAHMS with statistical knowledge of U.S. operations and food-animal populations, enabling data collectors to approach a sample of potential participants. Volunteers from this sample represent a predetermined portion of the national herds, usually above 70 percent of the targeted animal population (at both herd and individual animal levels.)

Before designing a study, NAHMS conducts a **needs assessment** of critical information gaps involving the industry and related groups. Then, an optimal study design is chosen to collect the necessary data incorporating questionnaires and biologic sample collection. NAHMS performs evaluations of biologic samples in cooperation with the USDA:National Veterinary Services Laboratories and recruited university laboratories.





## NAHMS National Studies: 1989 - 1996

<i>Date</i>	<i>Study Name</i>	<i># Producers</i>	<i>U.S. Population Represented by Core Data</i>
1989-90	National Swine Survey	1,661	95% swine
1990-91	National Dairy Heifer Evaluation Project (NDHEP)	1,811	78% milk cows/
1993-94	Cow/Calf Health & Productivity Audit (CHAPA)	2,539	100% cow/calf operations
1994-95	Cattle on Feed Evaluation (COFE)	3,214	85.8% cattle on feed
1995	Swine '95: Grower/Finisher	3,000	91% hogs
1996	Dairy '96	4,000	83% nation's milk cows

NAHMS interprets results in the context of the study design and other available information with input from external reviewers to provide recommendations or suggest further research needs or actions. Information is subject to outside review by subject matter specialists prior to release.

NAHMS provides a framework for investigations on health and management issues of local interest as well. A study of fescue in the southeast and investigation of the relationship between calf health and neospora abortion in California are examples.

### **How are national study data used?**

Study results enhance APHIS' ability to respond to disease outbreaks. NAHMS information helped policy makers dispel public condemnation of food-animal agriculture following human disease outbreaks in the early 1990's. Prevalence of Escherichia coli 0157:H7 and Cryptosporidium in dairy calves were proactively identified through the NAHMS National Dairy Heifer Evaluation Project. A few years later, more results from the same study helped officials address an outbreak of acute bovine viral diarrhea (BVD).

Beyond responding to outbreak information needs, NAHMS data continue to help policy makers and researchers address disease problems by providing scientifically-based information on management practices, animal health, and the interrelationships between these factors. The same information applies to other agricultural concerns, such as quality control, production levels, and cost efficiency.

**Benefiting education is a primary goal of the NAHMS program.** The National Cattlemen's Association and other beef-related organizations have used results of NAHMS' Beef Cow/Calf Health and Productivity Audit and Cattle on Feed Evaluation to educate producers on how changes in branding and

injection practices can help minimize financial losses. Organizations, such as the American Association of Bovine Practitioners and the National Pork Producers Council, and private businesses, such as Hoechst Roussel Agri-Vet Company and private practitioners, have distributed NAHMS materials as educational tools to members, agricultural consultants, and clients. Federal and State government supervisors in many areas distribute information to increase representatives' knowledge base to enhance services to their clients.

NAHMS provides United States' international trading partners with a clearly defined and available monitoring system to enhance global marketing efforts.

**Dissemination of NAHMS information has emerged as an exciting aspect of the program.** The NAHMS National staff begins with direct mailing of informational summaries and tabular reports to participants and identified customers throughout the industry. The identified customer base continually broadens through individual inquiries that range from general study results to questions relating to specific areas.

Popular press and scientific publications help disseminate study results and analyses to the public. Scientific and organizational meetings are a forum for discussion, in both face-to-face and printed formats. Data users, such as producer and practitioner groups and private businesses, broaden dissemination efforts through newsletters, regional or local meetings, and on-farm visits. NAHMS has recently begun working with the rapidly expanding electronic capabilities of the Internet, disseminating information through E-mail, gophers, and shared folders.

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